

Autonomic, Agent-Based Simulation Management (A2SM) Framework, Phase I

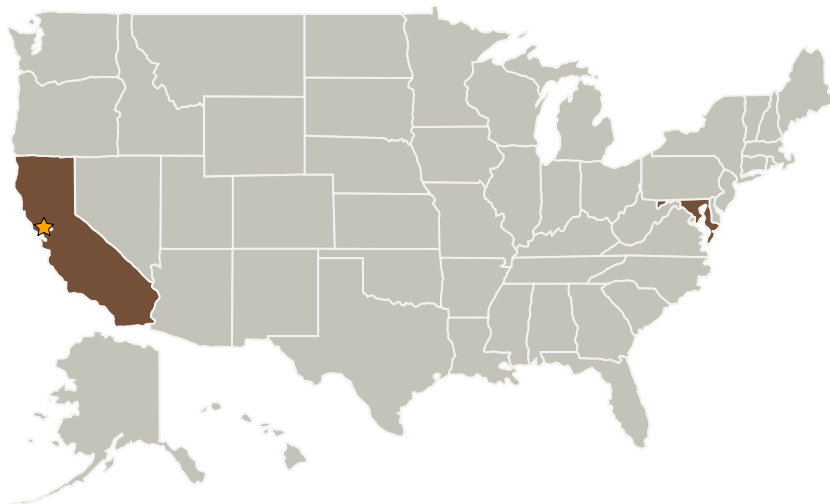
Completed Technology Project (2006 - 2006)



Project Introduction

Large scale numerical simulations, as typified by climate models, space weather models, and the like, typically involve non-linear governing equations in discretized form, subject to initial and/or boundary conditions. Large scale simulations may be employed in a coupled manner, with the output of one simulation providing input data to another. Simulation execution may require significant 'wall clock' time to complete, resources such as memory and CPU, and may involve components that are networked and the need for resources such as input data files or temporary local storage of intermediate data products. With collaboratories and the increase in interdisciplinary and multi-investigator scientific projects, there is an increase in distributed, networked, and coupled scientific simulations. Moreover, problem complexity may require that multiple sets of parameters in the problem space be investigated, thus necessitating multiple simulation runs. With simulation runs extending in time, involving networked components, and networked resource usage, setting-up and monitoring these runs is non-trivial and increasingly time intensive. Such activity can waste a researcher's time; yet the simulation runs must be set-up and then monitored, as crashes, missing components, permission problems, network problems, etc., do occur. Our innovation is a self-regulating, autonomic, agent-based framework that can manage simulation runs.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer

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Organizations Performing Work	Role	Type	Location
★ Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Intelligent Automation, Inc.	Supporting Organization	Industry	Rockville, Maryland

Primary U.S. Work Locations	
California	Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
 - └ TX16.3 Traffic Management Concepts